

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Perry A. Frey,
Frank J. Ruzicka

Date: May 1, 2001

Docket No.: 032026:0476D

For: DNA MOLECULES ENCODING BACTERIAL LYSINE 2,3-AMINOMUTASE

INFORMATION DISCLOSURE STATEMENT

Box PATENT APPLICATION
Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

With respect to the examination of the accompanying application, applicants cite the following documents, copies of which are enclosed. These documents are also listed on an accompanying Form PTO-1449.

OTHER DOCUMENTS

Costilow, R.N. *et al.*, "Isolation and Identification of β -Lysine as an Intermediate in Lysine Fermentation, Journal of Biological Chemistry, Vol. 241, No. 7, pp. 1573-1580 (1966).

Chirpich, T.P. *et al.*, "Purification and Properties of a Pyridoxal Phosphate and S-Adenosylmethionine Activated Enzyme", _____, Vol. _____, No. _____, pp. 1778-1789 (1970).

Zappia, V. and Barker, H.A., "Studies on Lysine 2,3-Aminomutase Subunit Structure and Sulfhydryl Groups", Biochim. Biophys. Acta, Vol. 207, pp. 505-513 (1970).

Aberhart, D.J. *et al.*, "Stereochemistry of Lysine 2,3-Aminomutase", Journal of the American Chemical Society, Vol. 103, 6750-6752.(1981).



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Frey, P.A., and Moss, M.L., "S-Adenosylmethionine and the Mechanism of Hydrogen Transfer in the Lysine 2,3-Aminomutase Reaction", Cold Spring Harbor Symposia on Quantitative Biology, Vol. LII, pp. 571-577 (1987).

Moss, M. and Frey, P.A., "The Role of S-Adenosylmethionine in the Lysine 2,3-Aminomutase Reaction", The Journal of Biological Chemistry, Vol. 262, No., 31, pp. 14859-14862 (1987).

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Aberhart, D.J. and Cotting, J., "Mechanistic Studies on Lysine 2,3-Aminomutase: Carbon-13-Deuterium Crossover Experiments", J. Chem. Soc. Perkin Trans 1, pp. 2119-2122 (1988).

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Frey, P.A. *et al.*, "The Roles of S-Adenosylmethionine and Pyridoxal Phosphate in the Lysine 2,3-Aminomutase Reaction", Annals of the New York Academy of Sciences, Vol. 585, pp. 368-378 (1990).

Moss, M.L. and Frey, P.A., "Activation of Lysine 2,3-Aminomutase by S-Adenosylmethionine", The Journal of Biological Chemistry, Vol. 265, No. 30, pp. 18112-18115 (1990).

Song, K.B. and Frey, P.A., "Molecular Properties of Lysine-2,3-Aminomutase", The Journal of Biological Chemistry, Vol. 266, No. 12, pp. 7651-7655 (1991).

Petrovich, R. M. *et al.*, "Metal Cofactors of Lysine-2,3-Aminomutase", The Journal of Biological Chemistry, Vol. 266, No. 12, 7656-7660 (1991).

Kilgore, J.L. and Aberhart, D.J., "Lysine 2,3-Aminomutase: Role of S-Adenosyl-L-Methionine in the Mechanism. Demonstration of Tritium Transfer from (2RS, 3RS)-[3-³H]Lysine to S-Adenosyl-L-Methionine", J. Chem. Soc. Perkin Trans 1, pp. 79-84 (1991).

Ballinger, M.D. *et al.*, "Structure of a Substrate Radical Intermediate in the Reaction of Lysine 2,3-Aminomutase", Biochemistry, Vol. 31, No. 44, pp. 10782-10789 (1992).

Ballinger, M.D. *et al.*, "An Organic Radical in the Lysine 2,3-Aminomutase Reaction", Biochemistry, Vol. 31, No. 4, pp. 949-953 (1992).

Petrovich, R.M. *et al.*, "Characterization of Iron-Sulfur Clusters in Lysine 2,3-Aminomutase by Electron Paramagnetic Resonance Spectroscopy", Biochemistry, Vol. 31, No. 44, pp. 10774-10781 (1992).

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Ballinger, M.D. *et al.*, "Pulsed Electron Paramagnetic Resonance Studies of the Lysine 2,3-Aminomutase Substrate Radical: Evidence for Participation of Pyridoxal 5'-Phosphate in a Radical Rearrangement", *Biochemistry*, Vol. 34, No. 31, pp. 10086-10093 (1995).

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Koskinen, A.M.P., "Asymmetry: To Make a Distinction", *Pure & Appl. Chem.*, Vol. 67, No. 7, pp. 1031-1036 (1995).

Wu, W. *et al.*, "Observation of a Second Substrate Radical Intermediate in the Reaction of Lysine 2,3-Aminomutase: A Radical Centered on the β -Carbon of the Alternative Substrate, 4-Thia-L-lysine", *Biochemistry*, Vol. 34, No. 33, pp. 10532-10537 (1995).

Chang, C.H. *et al.*, "Lysine 2,3-Aminomutase Rapid Mix-Freeze-Quench Electron Paramagnetic Resonance Studies Establishing the Kinetic Competence of a Substrate-Based Radical Intermediate", *Biochemistry*, Vol. 35, No. 34, p. 11081-11084 (1996).

Cardillo, G. and Tomasini, C., "Asymmetric Synthesis of β -Amino Acids and α -Substituted β -Amino Acids", *Chemical Society Reviews* Vol. 25, No. 2, pp. 117-128 (1996).

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Baker, J. J. and Stadtman, T.C., "Amino Mutases", *B₁₂*. Vol. 2, *Biochemistry and Medicine*, pp. 203-232.

Blattner, Fredrick R., *et al.*, "The Complete Genome Sequence of Escherichia coli K-12," Science, Vol. 277, pp. 1453-1462, (1997).

Deckert, *et al.*, "The complete genome of the hyperthermophilic bacterium Aquifex aeolicus," Nature, Vol. 392, pp. 353-358, (1998).

Fraser, *et al.*, "Complete Genome Sequence of Treponema pallidum, the Syphilis Spirochete," Science, Vol. 281, pp. 375-388, (1998).

Deckert, *et al.*, "The Complete Genome of the Hyperthermophilic Bacterium Aquifex aeolicus," Genbank Accession No: E70341.

Fraser, *et al.*, "Complete Genome Sequence of Treponema pallidum, the Syphilis Spirochete, Genbank Accession No: AE001197.

REMARKS

The submission of any document herewith, which is not a statutory bar, is not intended as an admission that such document constitutes prior art against the claims of the present application or that such document is considered material to patentability as defined in 37 CFR §1.56(b). Applicants do not waive any rights to take any action which would be appropriate to antedate or otherwise remove as a competent reference any document which is determined to be a prima facie prior art reference against the claims of the present application.

Applicants note that the citations to the references of Chirpich *et al.* and Stadtman are incomplete. Applicants do not currently have the remainder of these citations and will provide the additional information as soon as it is available.

It is thus requested that the foregoing documents be considered during examination of the accompanying application and be specifically made of record therein.

Respectfully submitted,



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